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PROMOTING SUSTAINABILITY IN THE LIGHT INDUSTRY OF THE REPUBLIC OF MOLDOVA WHILE ENSURING COMPETITIVENESS

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Abstract. This article elucidates the importance and necessity of promoting sustainability in Moldova’s Light Industry while ensuring a high level of competitiveness. The main directions for transforming the industry into a sustainable and competitive one is presented, focusing on the promotion of innovation and digitization, maintaining social and environmental standards, increasing efficiency, added value, and improving product quality to boost sales and exports. Specific actions are highlighted that are expected to generate substantial growth in the industry, namely: increasing productivity and efficiency through the implementation of the SMART program; promoting investments in innovation, automation, and digitization; and improving products based on the implementation of digital and sustainable design. The successful implementation of these directions for enhancing the sustainability and competitiveness of Moldova’s Light Industry is anticipated to strengthen the position of the employers’ association of the light industry, APIUS, and the ZIPHOUSE hub, thereby protecting the light industry.

Key words: *sustainability, competitiveness, innovation, investment, automation, efficiency, digital design, quality standards.*

JEL code: *O3, O32, L6.*

INTRODUCTION

Although in recent years the automotive and IT service sectors in the Republic of Moldova have been developing at a fairly rapid pace, the Light Industry(which includes textile production, garment manufacturing, and the production of leather goods and footwear) remains a key sector of the national economy, positioning itself as a predominantly export-oriented industry, generating significant exports mainly to the EU market [1]. In 2023, exports from the light industry, valued at approximately USD 399 million, accounted for about 10% of the country's total exports (Table 1), placing the sector among the top ten exporters and continuing to play an important role in the country’s balance of payments.

Table 1: Trend of the share of Light Industry exports by country groups, %

Share of exports by country groups	2018	2019	2020	2021	2022	2023
Share of EU countries including the United Kingdom	81,9	83,9	81,0			
Share of EU countries excluding the United Kingdom				68,9	72,0	78,2
Share of CIS countries	11,1	6,9	7,3	7,4	5,5	5,4
Share in other countries	7,0	9,2	11,7	27,3	22,5	16,4

Source: Calculated by the authors based on data from the statistical yearbook [2].

During the COVID-19 pandemic, the export volume of the Light Industry decreased from USD 379.23 million to USD 338.98 million, but the industry maintained almost the same share of the country's total exports. Over the next two years, export volumes increased, but the export share declined to around 10%, due to the fact that the Light Industry experienced a slower export growth rate in 2022 compared to the overall export growth rate of the country, which was influenced by the re-export of petroleum products to Ukraine.

The primary destination for Moldova’s Light Industry exports is the European Union, including countries such as Italy, Germany, Romania, Poland, and others. The share of Moldova’s

Light Industry exports to the European Union is quite significant and continues to grow. Post-pandemic, the share of exports to the EU increased from 68.9% in 2021 to 78.2% in 2023, an increase of over 9 percentage points (figure 1).

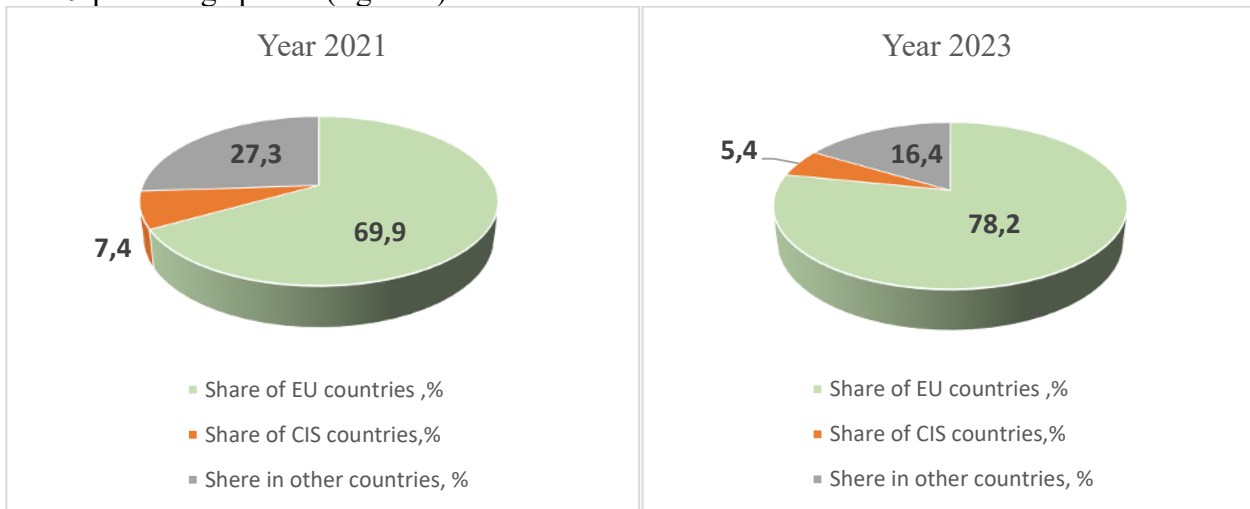


Figure 1. Trends of the structure of Light Industry exports by country group

Source: Calculated by the authors based on data from the statistical yearbook [3].

The Light Industry continues to develop. The growth of the sector is evidenced by the increasing number of enterprises (figure 2).

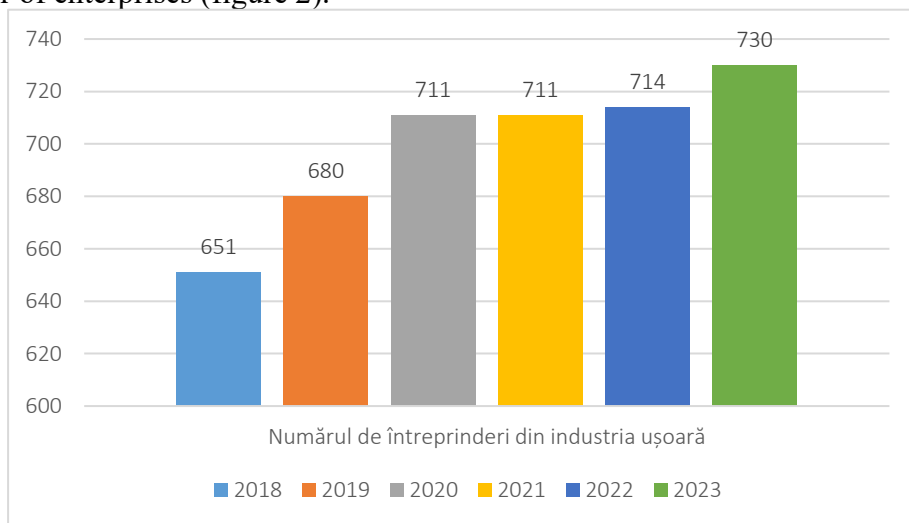


Figure 2. The number of enterprises in the Light Industry of the Republic of Moldova

Source: Calculated by the authors based on data from the statistical yearbook [4].

During the last six years, the number of enterprises increased from 651 to 730 units, or by more than 12%. Even during the pandemic, the number of businesses grew compared to 2018. The manufacture of clothing is the largest of these three sectors in terms of the number of companies, employment, and turnover.

The Light Industry has a significant social impact by employing over 19,240 workers at the end of 2023, which constitutes approximately 3.6% of the total number of employees in the entire economy.

Despite the fact that the Light Industry is one of the country’s most resilient sectors to economic changes, having demonstrated an increase in competitiveness over the decades, it faces certain challenges, the main ones being:

1. *The shortage of staff.* The total employment of 19240 persons, mostly engaged in apparel manufacturing (around of 70%) has decreased during the past five years by 26%.

2. *The small margin of profitability.* Less than 50 % of all companies in Light Industry had a positive net result, but the margin is still quite small. The small margin of profitability does not allow the companies to make the necessary investments to introduce innovations, automation, and digitization. Even the borrow sources (bank loans) are not attractive for financing investments due to high interest rates compared with small profitability margin.
3. *Insufficient implementation of innovations, automation and digitization.* The industry as a whole suffers from chronic underinvestment. The industry suffers from chronic underinvestment. Investment levels are moderate, with apparel companies investing only 3.6% and textiles, leather goods, and footwear companies investing around 1% of their turnover in 2022

The industry is also influenced by certain major changes taking place in the ecosystem. Change is coming from at least 3 different angles:

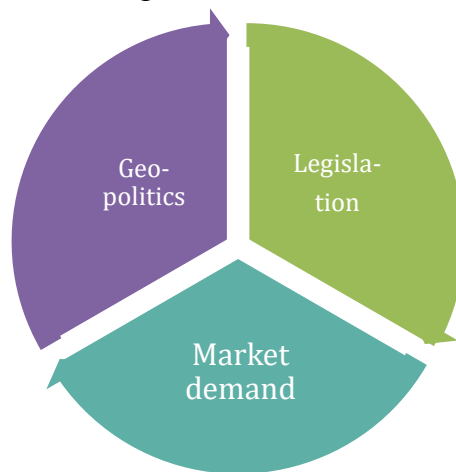


Figure 3. The angles of ecosystem changes

Source: [5].

1. Legislation – the industry is moving from an unregulated sector to become a very regulated sector; companies will need to adapt to this new environment, which will have consequences across the entire value chain;
2. Market demand - consumers are increasingly conscious about the environmental impact of a textile product, and want to be better informed about the origin or whether products comply with social standards;
3. Geo-political trends - acceleration of Moldova’s accession process to the EU, which will impose a formidable challenge on the country to adopt the EU “acquis Communautaire”, but at the same time offer opportunities to Moldova’s industry for better access to the most important integrated market of 450 million consumers.

Each of these trends will have a dramatic impact on Light Industry companies in Moldova. For those who think innovatively at every stage of their business, these changes will provide opportunities to grow their business and position themselves very well inside and outside Moldova; for others, change will be difficult and painful, with many issues to contend with. To take advantage of opportunities, the industry needs to transition to sustainable development while remaining competitive. To this end, a Sustainability Roadmap for Moldova’s Light Industry has been developed, which envisions long-term growth of the textile sector to benefit all employees and companies.

1. METHODOLOGY OF THE STUDY

The development of the Sustainability Roadmap for Moldova's Light Industry was based on the Sustainability Diagnostic in the Moldova Light Industry

The analysis of the current situation in the Republic of Moldova in terms of sustainability in the Light Industry was based on the interviews and discussions with various relevant stakeholders in September, 2023. Interviews and Discussions were conducted both in-person and online with 22

companies. The questionnaire for interviews and discussions contains 23 questions that refer to the main pillars of sustainability: economic, social and environmental.

The main purpose of the interviews was to identify, to obtain a comprehensive perspective on sustainability practices within the industry, including the economic growth trends of the companies in the Light Industry of the Republic of Moldova, the situation regarding the working conditions and the level of social responsibility of the companies, as well as the attitude towards the environment, especially regarding the types of waste that is formed, the quantity of waste, the method of recycling, but also the problems faced by the companies in terms of ensuring sustainability.

2. ASSESSMENT OF SUSTAINABILITY OF MOLDOVAN LIGHT INDUSTRYSECTOR

During the visits it was possible to identify and analyze different environmental and social challenges:

- Defining sustainability for Moldovan textile sector.
- People and Labour Force.
- Certification and supply chain requirements.
- Resources and waste.
- Climate change and energy and others

Defining sustainability for Moldovan textile sector.

Interviews with numerous directors of clothing factories in Moldova consistently reveal a strong association between sustainability and quality, highlighting it as a paramount requirement. This association appears as a result of the fact that currently, there is no universally accepted definition of sustainability within the textile sector. However, various international organizations, such as ISO, Textile Exchange, and other private standards, have developed approaches based on several key pillars: full traceability from fiber to garment, control of environmental and social aspects throughout the supply chain, raw material composition, chemical performance, and other related factors. [5]:

On average, Moldovan companies recognize the importance of sustainable development. However, despite numerous efforts, its practical implementation in manufacturing remains limited. The European Union developed the Strategy for Sustainable and Circular Textiles which is well-defined, but its successful execution depends on developing tools to assess the level of sustainable development and evaluating the success of implementation within a real business environment.

To ensure a sustainable product, the following aspects of sustainability are essential [5]:

- Full traceability: From raw materials to the end consumer, providing information on social and environmental attributes.
- Control of environmental and social risks: Across the entire garment supply chain (including raw material sourcing, spinning, weaving, dyeing and finishing, stamping, and final garment production), with a focus on environmental aspects in wet processes.
- Use of preferred raw materials: Such as those with the best Life Cycle Assessment (LCA) performance, including recycled products, organic materials, renewable resources, or those with low environmental impact.
- Chemical performance: Ensuring the use of non-hazardous chemicals in the product.
- Additional considerations: Including mixed fiber compositions for recyclability, prevention of unintentional microplastics release, and providing information on product use and care

For Light Industry companies from Moldova, these aspects are practically new and will require a significant effort for implementation.

People and Labour Force.

It is important to address personnel and labor insurance within the textile value chain, particularly in garment manufacturing, which is the most labor-intensive step. There is a global trend towards automating and mechanizing as many processes as possible to enhance competitiveness. In Moldavian apparel, examples include adopting advanced technologies for pattern preparation and cutting, or other operations that could be performed through robotization

It is also worth exploring the potential for companies to collaborate with development departments involved in tailoring and prototyping, and the benefits such collaboration could bring to textile companies. Close cooperation between textile companies in Moldova and software developers for pattern making could result in a competitive advantage

It is necessary to mention what concerns the personnel and labor insurance in all the textile value chains garment manufacturing is the step with more intense labor force. There is a world trend to try to automatize and mechanized as many processes as possible instead of use labor force to increase the competitiveness. Some examples in Moldavian apparel could be getting better technologies for patterns preparation and cutting or other operations that could be done by robotization.

A key aspect for workers, specialist and technicians is training in sustainability to increase knowledge of sustainability in the textile sector, eco-design and other aspects based on quality and efficiency to double the impact through competitiveness and increase environmental and social performance.

Certification and supply chain requirements.

The implementation of certifications involves maintaining certain rules and procedures to minimize certain risks, ensure high quality news and customer loyalty. In Moldova's Light Industry enterprises, it is common to implement integrated management systems based on the use of the requirements of three standards: ISO 14,000 (Environmental Management), ISO 9001 (Quality and Customer Management), ISO 45,000 (Safety and Health). All these certifications ensure that companies have procedures and protocols for many aspects.

Simultaneously with the implementation of the Integrated Management System, some companies successfully passed social audits requested by international clients. Several companies have passed SMETA (Sedex Members Ethical Trade Audit) social audits, which incorporate responsible business practices, as well as BSCI (Business Social Compliance Initiative) audits, both of which are recognized by the industry and European clients.

In the same time in Moldovan companies, it is not common to use certification for products with sustainable attributes to ensure the origin of raw materials, traceability, or social and environmental attributes.

Moldovan companies do not hold international sustainability certifications such as: Textile exchange standards (GRS, OCS, RCS, RDS), GOTS, Bluesign, BCI cotton, etc. At EU level, the eco-label will increase sustainability requirements. These will need to be implemented

Resources and waste.

Moldavian Textile sector supply their raw materials from other markets mainly Turkey, Asia and Italy commonly they are not asking to encourage their suppliers to supply sustainable raw materials as: recycled, organic, or others raw materials.

It is clear from the interviews that many small businesses buy materials that are available in stock from previous seasons. These materials are readily available and also cheaper than the current season's materials.

We find this approach very appropriate, as it shows the extreme flexibility and resourcefulness of textile business managers in Moldova.

In the Light Industry the value chain generates a fairly wide range of waste. Among them, two categories of waste can be listed: Post-industrial or pre-consumer waste and Post-consumer waste.

Waste management in Moldova Light Industry is still somewhat lax. Firstly, due to a lack of regulation, and secondly, due to a lack of companies involved in the collection and recycling of textile waste. It should be pointed out here that many EU companies in other EU countries are still facing this challenge.

Climate change and energy

The visit to enterprises showed that in the enterprises of the Light Industry of Moldova, they make a lot of efforts to be efficient and reduce their carbon footprint. One of the best techniques available to reduce your carbon footprint is installing solar panels and increasing efficiency which helps increase competitiveness

3. DEFINING SUSTAINABILITY FOR THE MOLDOVAN LIGHT INDUSTRY

The factors driving changes in the ecosystem were viewed as opportunities to formulate recommendations for the sustainable development of the industry. The following recommendations for the sustainable development of Moldova's Light Industry are based on these three areas of the ecosystem:

1. *Development a textile waste strategy, covering both industrial and post-consumer waste*

Given the significant environmental impact of the textile industrial ecosystem and its mixed trends over time, the European Commission has developed an EU Strategy for Sustainable and Circular Textiles [6]. This strategy aligns with the European Green Deal's ambition to achieve sustainable growth that is climate-neutral, energy- and resource-efficient, and respectful of nature, all within a clean and circular economy framework. In light of this, it is recommended that Moldova's Light Industry develop a comprehensive textile waste strategy covering both industrial and post-consumer waste. This includes

- detailed mapping of waste streams in Moldova
- setting up collection and sorting capacity,
- establish an EPR scheme and PRO agency to manage the scheme
- create a recycling hub in Moldova

For waste strategy development it is recommended to establish a structured dialogue between Ministry of Environment and the Light Industry, to ensure a smooth preparation and introduction of the EU Textile Strategy legislation (Eco Design, Due Diligence, Waste Framework).

Considering the market demands and the increasing consumer concerns regarding the environmental impact of textile products, as well as their desire for better information about product origins and compliance with social standards, it is recommended to continue the implementation of the SMART program based on the following pillars:

2. *Increasing the reputation of Moldovan Light Industry companies as a reliable partner in production based on ensuring sustainability due to certifications.*

In order to maintain existing customers and attract new one, companies must have certificates of Integrated Management Systems, Social Audits, as well as certificates for textiles, clothing and others. For this it is important to be established in Moldova a certification body, allowing Moldova companies to obtain necessary certification and quality controls.

3. *Consolidation of product improvement by increasing design skills within private label companies to penetrate the foreign market.*

For Moldova, it is crucial to increase the share of companies that produce and sell under their own brand. Design support programs, such as the Flying Designers program, play a critical role in transitioning Moldova's fashion industry to value-added production schemes and own-label manufacturing. These initiatives contribute significantly to enhancing the competitiveness and sustainability of these enterprises.

4. *Faster development and implementation of online sales*

Special attention must be given to the digitalization of sales by developing and accelerating the use of online sales channels. Supporting and developing sales under own brands is crucial, as it ensures the highest added value. The main objective is that within the next 3-4 years, companies receiving design support will be able to effectively utilize various online platforms for sales, thereby penetrating foreign markets.

5. *Investment in innovation, automation and digitalization*

Technological innovations are the key factors for the sustainable development of the enterprise. Implementing innovation, automation and digitalization of production processes and supply chains is vital for value increase, long-term competitiveness. Automation is a key driver of growth in the Moldovan Light Industry and are the key factors for increasing productivity, flexibility, quality, cost reduction and sustainability. The main areas of innovation in the textile industry can relate to the use of new sustainable materials for their existing brands.

Light Industry companies have been assisted in increasing their competitiveness through the implementation of the SMART Program (Streamline Manufacturing, Accountability, Resource

Efficiency, and Transparency). This program was conceptualized within the Moldova Competitiveness Project, funded by USAID, Sweden, and the UK. The main intervention areas of the SMART program include Production Optimization, Technology Improvement and Automation, Increasing Efficiency, Social Compliance, and Transparency. These areas are interconnected and synergistic, working together to produce the desired results. It is recommended to extend the implementation of the SMART program, as it, along with investments in innovations, will significantly contribute to both ensuring a high level of competitiveness and the sustainable development of the industry.

In general, it is important to keep the technology/production level as high as possible, otherwise companies will quickly fall behind the technological challenge.

The recommendation is to keep the annual investment level at 10%, either in knowledge, production and/or products and services.

CONCLUSIONS

Light Industry, which includes sectors like textiles, clothing, and footwear, plays a significant role in Moldova's economy. It provides employment opportunities and contributes to exports. Currently there is a steady growth in the number of Light Industry enterprises, which indicates the attractiveness of this sector for new market participants. In order to remain competitive in the future, it is necessary for this industry to promote sustainability, which includes three pillars: The Environmental Pillar, The Social Pillar and The Economic Pillar.

The analysis of the sustainability levels of enterprises in Moldova's Light Industry, based on three key pillars of sustainability, revealed that despite certain successes, there is still significant work to be done in this field.

The textile and apparel industry is undergoing significant changes. Companies must adapt to a new regulatory environment and respond to evolving consumer demands. While managing change can be challenging, it also presents opportunities for those who prepare effectively. Moldovan companies need to ready themselves for a new era in the light industry, emerging from these changes stronger than before.

To be successful, the following are required:

- Access to information: To understand new regulations and rules.
- Access to the latest technologies: To remain competitive and ready to utilize advancements.
- Access to financial resources: Necessary for investments in sustainable production and waste management.
- Access to skilled personnel: Ensuring the workforce has the right skills, particularly in digitalization and sustainability.
- Access to markets: Enhancing the promotion of 'Made in Moldova' products and establishing closer links with European consumers.
- Access to partners: Collaborating within the industry and with related stakeholders (e.g., in waste management, chemical, or construction industries).

The Sustainability Roadmap for Moldova's Light Industry, developed at the request of the light industry association APIUS, includes a series of recommendations and a medium-term action plan. The successful implementation of this plan is crucial for the sustainable development of companies in Moldova's Light Industry and their ability to remain competitive.

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